DON BOSCO COLLEGE OF ENGINEERING

FATORDA, MARGAO, GOA – 403 602.

DEPARTMENT OF COMPUTER ENGINEERING

2023 – 2024

ONLINE WEB STREAMING APPLICATION FOR COLLABORATIVE LEARNING

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2023 – 2024

CERTIFICATE

This is to certify that this dissertation is entitled

ONLINE WEB STREAMING APPLICATION FOR COLLABORATIVE LEARNING

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In partial fulfillment of the requirements of the Bachelor's Degree in Computer Engineering of Goa University is evaluated and found satisfactory.

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ABSTRACT

This college project endeavors to create an innovative streaming web application, specifically tailored to enhance collaborative learning within group study scenarios. The application is meticulously designed to integrate advanced features that facilitate synchronous interactions among students, fostering a dynamic and participatory virtual learning environment.At its core, the streaming web app seamlessly incorporates live streaming functionalities, allowing students to engage in real-time discussions, share insights, and collectively explore educational content. The interactive nature of the platform is further amplified through the integration of sophisticated note-making tools. These tools empower participants to collaboratively annotate documents, engage in shared whiteboard sessions, and contribute to a collective pool of knowledge. One of the key technical aspects explored in this project is the architectural design of the application. Leveraging a well-thought-out technology stack, the system is structured to ensure optimal performance, scalability, and responsiveness during live streaming sessions. Additionally, robust sharing mechanisms are implemented to enable seamless dissemination of collaborative notes among participants, ensuring that the collective knowledge generated during study sessions is easily accessible and shareable. This report serves as a detailed technical documentation of the project, offering insights into the development process, challenges faced, and solutions implemented. It provides a comprehensive overview of the underlying technologies, design choices, and the intricacies involved in creating an immersive and interactive virtual learning space.

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CHAPTER 1:

INTRODUCTION

1.1 INTRODUCTION TO PROJECT

In the era of exponential growth of online education, there is a lack in a particular and specific mode that facilitates peer to peer collaborative education, a platform with features tailored to facilitate and enhance the experience of collaborative learning.

LearnSync is an innovative mobile application that empowers you to learn and grow together with your friends. It's not just another study app; it's a vibrant ecosystem where you can explore comprehensive topics while teaching and supporting each other.

LearnSync is designed to revolutionize collaborative learning and create a thriving community of students. LearnSync will create a community of students that have a common goal in mind that is learning form fellow students.

LearnSync is a groundbreaking app that transforms the way we learn by connecting friends and creating a symbiotic community of students. It's a place where learning becomes a collaborative adventure, and everyone has the opportunity to teach, learn, and grow together.

1.2 PURPOSE OF THE PROJECT

The goal of this project is to develop a streaming application specifically designed to facilitate collaborative learning experiences. In a rapidly evolving educational landscape, traditional methods of learning are being augmented by digital platforms that leverage real-time interaction and shared content. This streaming app aims to provide a dynamic and engaging environment where users can seamlessly collaborate, share knowledge, and participate in interactive learning activities. By harnessing the power of live streaming technology, the project seeks to enhance the educational journey by fostering a sense of community, and creating a platform where learners can collectively explore and understand diverse subjects. The primary goal is to empower users with a versatile tool that transcends physical boundaries, promoting collaborative learning on a global scale.

1.3 PROBLEM DEFINITION

1.3.1 EXISTING SYSTEM

The existing educational landscape predominantly relies on traditional methods of teaching, often constrained by physical classrooms and geographical limitations. Conventional learning management systems and online platforms have made strides in digitizing educational content, yet they often lack the real-time interactivity and collaborative features necessary for a truly engaging learning experience. Current systems may face challenges in providing seamless, live-streamed collaboration opportunities, hindering the potential for dynamic interaction among learners. This project seeks to address these limitations by introducing an innovative streaming application tailored specifically for collaborative learning, aiming to bridge the gaps in existing systems and enhance the overall educational journey for users.

1.3.2 PROPOSED SYSTEM

The proposed system envisions a transformative shift in the realm of collaborative learning through the introduction of an advanced streaming application. Designed with a focus on real-time interaction and shared engagement, this system aims to revolutionize the way individuals learn and collaborate. The platform will provide users with a seamless and intuitive interface for live streaming, enabling learners (students) to connect synchronously from different locations. Incorporating features such as interactive whiteboards, group discussions, and collaborative document editing, the proposed system intends to create a dynamic virtual classroom

environment. Additionally, the application will support multimedia content sharing, fostering a rich and immersive learning experience. By leveraging state-of-the-art streaming technology, the proposed system strives to empower users with a versatile tool that transcends traditional boundaries, fostering a global community of learners engaged in interactive and collaborative educational pursuit

1.4 SCOPE OF THE PROJECT

To foster an effortless and user-friendly interface for live streaming, empowering students to engage synchronously from diverse locations. By integrating functionalities like interactive whiteboards, group discussions, and collaborative document editing, our envisioned system seeks to cultivate an animated virtual classroom atmosphere.

1.5 REPORT ORGANIZATION

The current introductory section provides a brief introduction to each chapter.

Chapter 1: Introduction

This section focuses on the purpose and the scope of the proposed system.

Chapter 2: Literature Survey

This section describes the concepts and technologies used to develop the project.

Chapter 3: Software Requirement Specification

This section provides information about specific requirement of the proposed system.

Chapter 4: System Design

This section describes the software lifecycle model, which will be used in developing the software. It includes system design and detailed design.

Chapter 5: Implementation

This section details the step-by-step execution of the project plan and the integration of various components.

Chapter 6: Testing

This section presents the test cases applied and their corresponding results to validate the project's functionality.

Chapter 5: Conclusion

This section lists the conclusion that can be drawn from the work done so far.

CHAPTER 2 :
LITERATURE SURVEY

2.1 Study on Research Papers

[1] The research highlighted the advantages of web-based collaborative learning and the need for effective design and facilitation to maximize its benefits.

The study explored collaborative learning in a web-based environment using a mixed-methods approach, including surveys and interviews.

[2] The research highlighted streaming educational videos can enhance collaborative learning experiences by enabling real-time access to educational content.

This paper discusses the use of streaming technology in educational settings and its potential for collaborative learning.

[3] This paper explains that social tagging can enhance note sharing and collaborative learning experiences, leading to more effective knowledge sharing.

The study explores web-based note sharing and the role of social tagging in collaborative learning environments.

[4] This paper explains that effective collaborative learning involves not only the technology but also factors like instructional design, interaction, and group dynamics.

This paper provides a comprehensive review of web-based collaborative learning, emphasizing factors beyond technology that impact the success of collaborative learning initiatives.

2.2 Issues found in the existing systems, which can be solved using our project

- Many existing collaborative learning tools may lack essential features, making it challenging for students to engage in effective collaborative learning. This can hinder communication, knowledge sharing, and group projects.

- Integrating streaming technology effectively for collaborative learning can be a technical challenge. Inadequate integration may result in disruptions or inefficiencies in the learning process.
- Students often struggle with sharing and accessing class notes efficiently, which can lead to missed information and collaboration difficulties.
- Some students may feel disengaged in online collaborative learning environments. A lack of interaction and meaningful engagement can hinder the learning experience.

CHAPTER 3:

SOFTWARE REQUIREMENT SPECIFICATION

3.1 Introduction

3.1.1 Purpose

The project is designed to meet targeted needs in collaborative learning by facilitating live-streamed classes for educators, encouraging real-time student engagement. It prioritizes seamless collaboration through shared whiteboards and document editing tools, fostering active participation. Additionally, the project aims to enhance accessibility, break down geographical barriers, and improve versatility by supporting multimedia content sharing, ultimately elevating the collaborative learning experience.

3.1.2 Scope

The project scope encompasses the creation of a robust platform tailored for educators to conduct live-streamed classes with interactive features, promoting real-time student engagement. It extends to facilitating seamless collaboration through shared whiteboards and document editing tools, enhancing active participation. The scope further addresses accessibility challenges, enabling synchronous connection for learners across geographical locations, while also aiming to broaden collaborative learning possibilities through support for multimedia content sharing. In essence, the project scope focuses on building a comprehensive solution to address specific gaps in existing systems and elevate the overall collaborative learning experience.

3.1.3 Overview

The project, at its core, aims to assist in collaborative learning through the development of a streaming application. This transformative initiative seeks to transcend the limitations of conventional educational systems by introducing a dynamic platform that facilitates real-time interaction and shared engagement. The application will leverage state-of-the-art streaming technologies to create a virtual classroom environment where educators and learners can seamlessly connect from diverse locations. With a focus on interactivity, the platform will integrate features such as interactive whiteboards, group discussions, and collaborative document editing to enhance the overall learning experience. The project's overview includes the design and

implementation of a user-friendly interface that caters to the needs of both educators and learners, promoting accessibility and ease of use. By fostering a global community of learners engaged in collaborative educational pursuits, the project envisions a future where the boundaries of traditional learning are transcended, offering a versatile and transformative tool for shared knowledge and collective exploration.

3.2 Overall Description

Project Functions

The project is aimed to have the following functions:

- Streaming and live chat
- Content Sharing
- Note Making
- Note Sharing

3.1 Specific Requirements

3.1.1 Software quality attributes

a. Reliability

Reliability is the ability of the system to remain operational over time. Reliability is measured as the probability that the system will not fail to perform its intended functions over a specified time interval.

b. Availability

Availability defines the proportion of time that the system is functional and working. It can be Imeasured as the percentage of the total system downtime over a predefined period. Availability will be affected by system errors, infrastructure problems, malicious attacks, and system load.

c. Security

Security is the capability of the system to prevent malicious or accidental actions outside of

the designed usage, and to prevent disclosure or loss of information. A secure system aims to ' protect and prevent unauthorised modification of information.

d. Maintainability

Maintainability is the ability of the system to undergo changes with a degree of ease. These changes can impact components, services, features, and interfaces when adding or changing • the functionality, fixing errors and meeting new business requirements.

CHAPTER 4:

DESIGN

4.1 SOFTWARE DEVELOPMENT MODEL

AGILE MODEL

The Agile model is an iterative and incremental approach to software development that emphasizes flexibility, collaboration, and customer satisfaction. Unlike traditional waterfall methodologies, Agile promotes adaptive planning and continuous improvement throughout the development process. The Agile model divides the project into small, functional increments called iterations, with each iteration typically lasting two to four weeks. Cross-functional teams, including developers, testers, and stakeholders, work collaboratively on these iterations to deliver a potentially shippable product increment at the end of each cycle.

Key principles of the Agile model include regular reassessment and adaptation of plans, a strong focus on customer feedback, and the ability to respond to changing requirements. Agile methodologies, such as Scrum, Kanban, and Extreme Programming (XP), provide specific frameworks and practices to implement the Agile principles effectively. This approach is particularly well-suited for projects where requirements are expected to evolve, allowing teams to respond quickly to changes in priorities or customer needs. The Agile model has gained widespread adoption in the software development industry for its ability to promote transparency, collaboration, and the delivery of high-quality software in a more responsive and adaptive manner.

We chose this model for the following reasons:

- Utilize Agile methodology for a 4-month streaming project with 5 team members.
- Benefit from frequent feedback in a dynamic industry like streaming.
- Promote collaboration among team members.
- Enable quick adjustments to project requirements.

Following are the phases in the Agile model are as follows:

1. **Requirements gathering:** In this phase, you must define the requirements. You should explain business opportunities and plan the time and effort needed to build the project. Based on this information, you can evaluate technical and economic feasibility.
2. **Design the requirements**: When you have identified the project, work with stakeholders to define requirements. You can use the user flow diagram or the high-level UML diagram to show the work of new features and show how it will apply to your existing system.
3. **Construction/ iteration**: When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.
4. **Testing**: In this phase, the Quality Assurance team examines the product's performance and looks for the bug.
5. **Deployment**: In this phase, the team issues a product for the user's work environment.

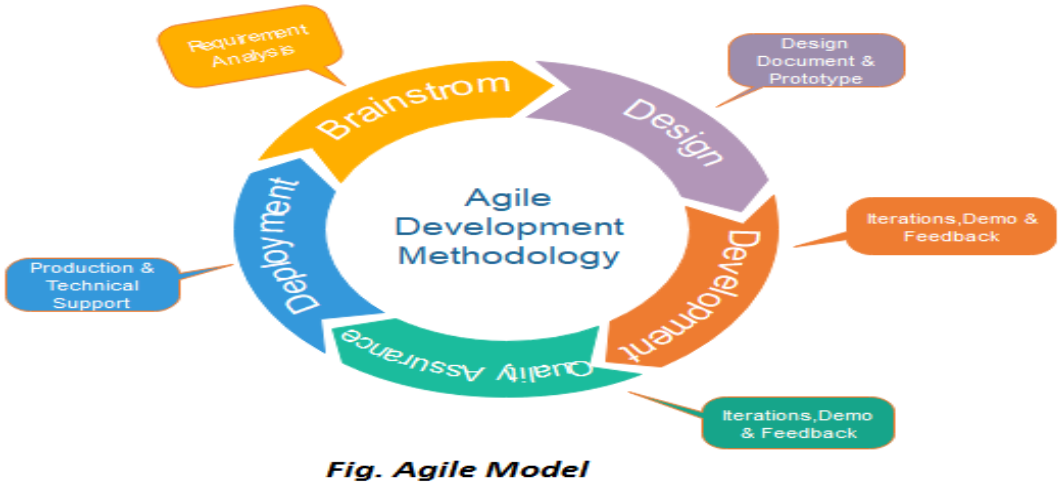


Fig 4.1 Agile model

4.2 SYSTEM DESIGN

4.2.1 Data Flow Diagram

Data Flow Diagrams (DFD) are a visual representation of how data flows within a system, depicting processes, data stores, data sources, and data destinations. They offer a clear and concise way to illustrate the flow of information through a system and are widely used in system analysis and design. DFDs help to identify data transformations, data storage points, and interactions between different components, providing a comprehensive overview of the system's data architecture. They serve as a valuable tool for understanding, analyzing, and communicating the data flow and processing within a complex system.

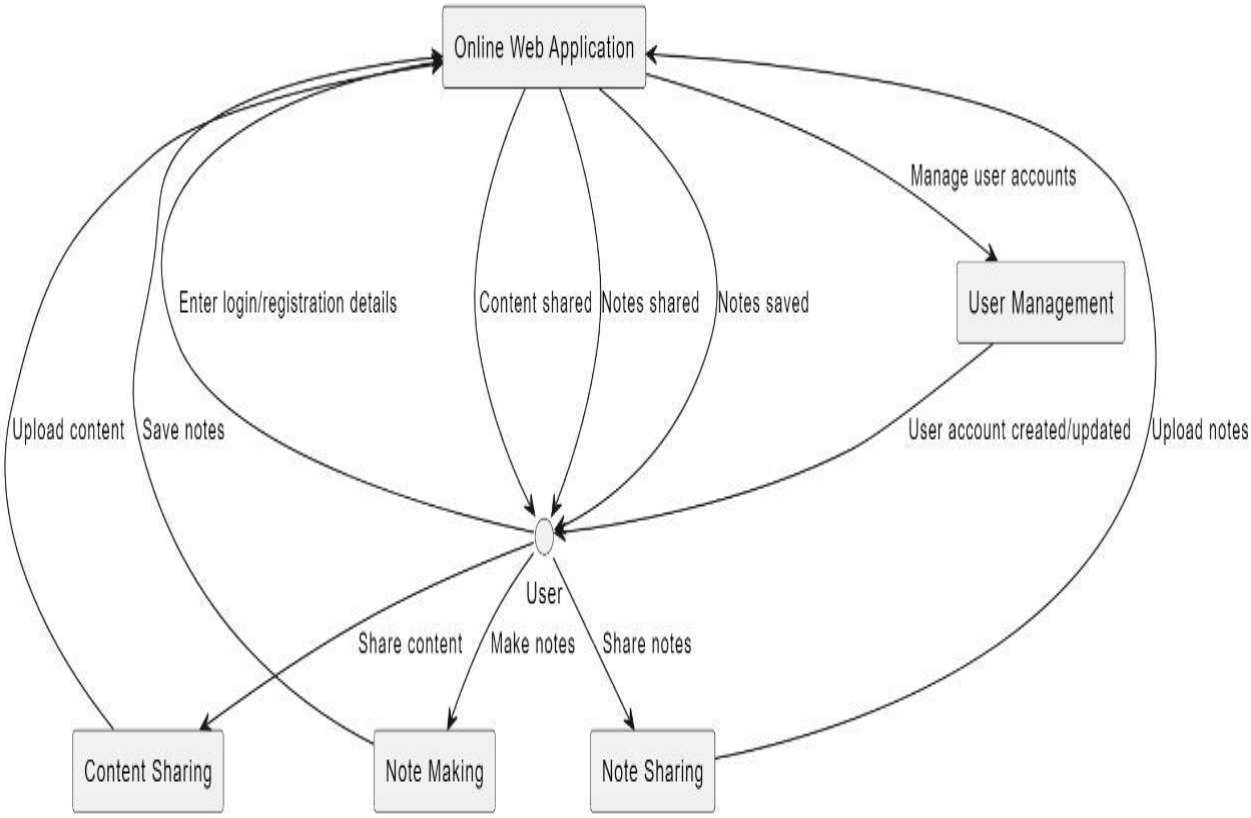


Fig 4.2 Level O DFD

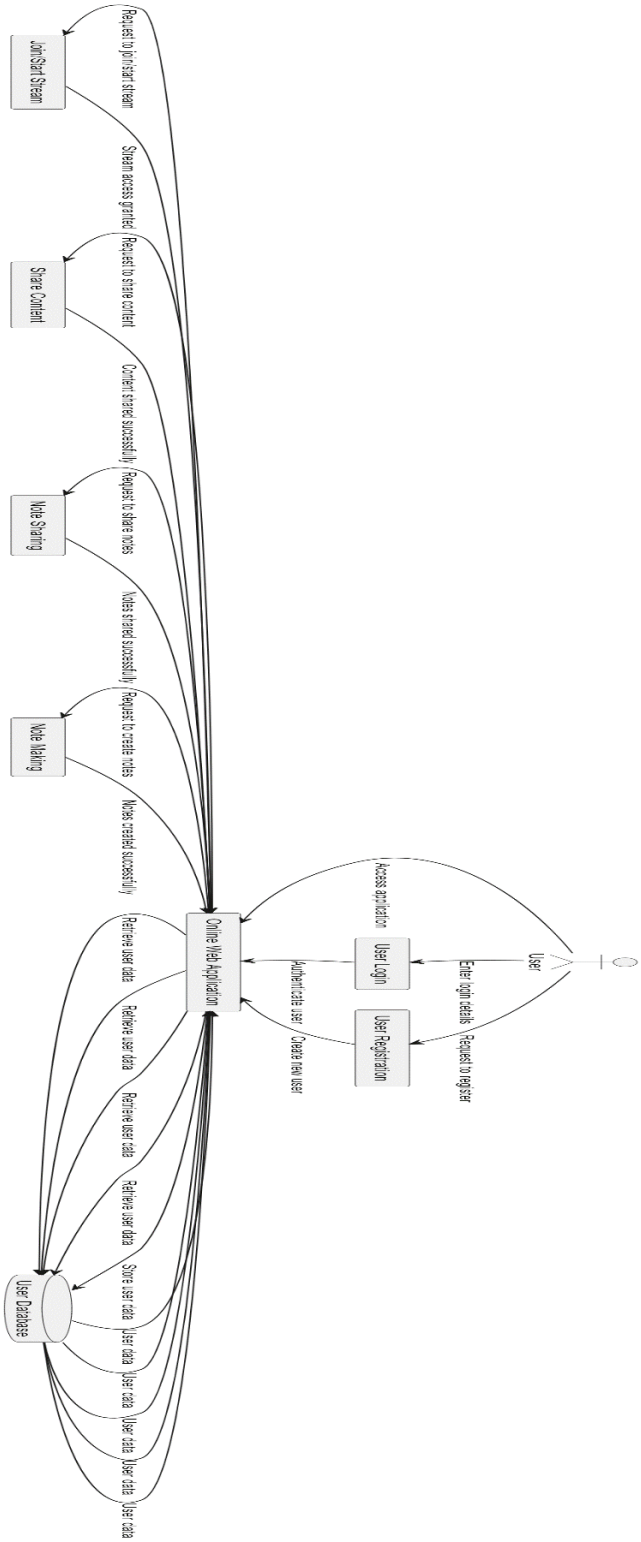


fig 4.3 Level 1 DFD

4.3 DETAIL DESIGN

4.3.1 Use Case Diagram

Use case diagrams provide a visual representation of how users interact with a system, illustrating various scenarios and interactions. They showcase the system's functionality from an end-user perspective, helping to identify, clarify, and organize system requirements. By mapping out actors, use cases, and their relationships, use case diagrams serve as a valuable tool for both communication and understanding the essential functionalities of a software system.

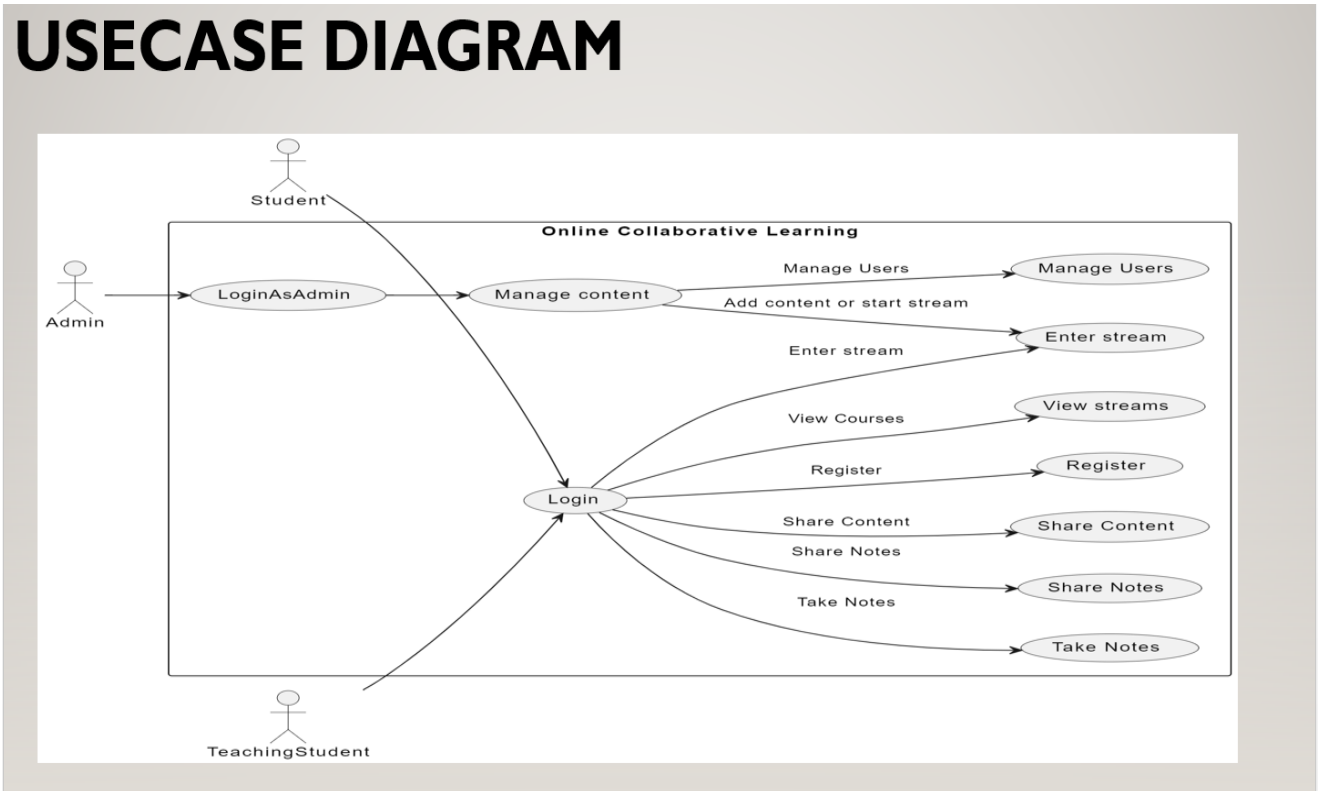


Fig 4.4 Use case Diagram

4.3.2 Activity Diagram

Activity diagrams in UML provide a visual representation of the sequential flow of activities within a system, illustrating processes, decisions, and concurrent actions. They are valuable for modeling and understanding dynamic aspects of a system's behavior during the software development lifecycle.

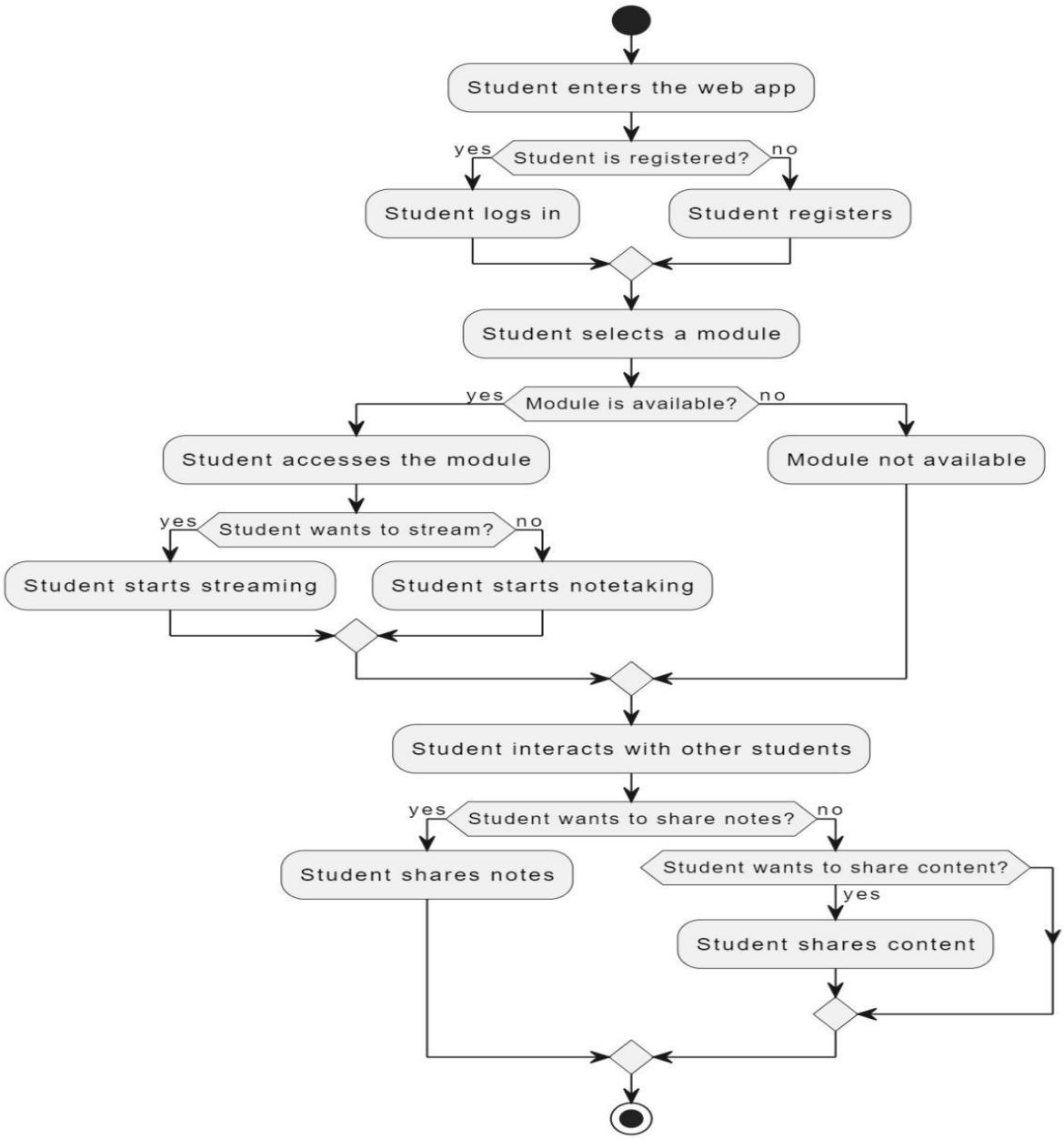
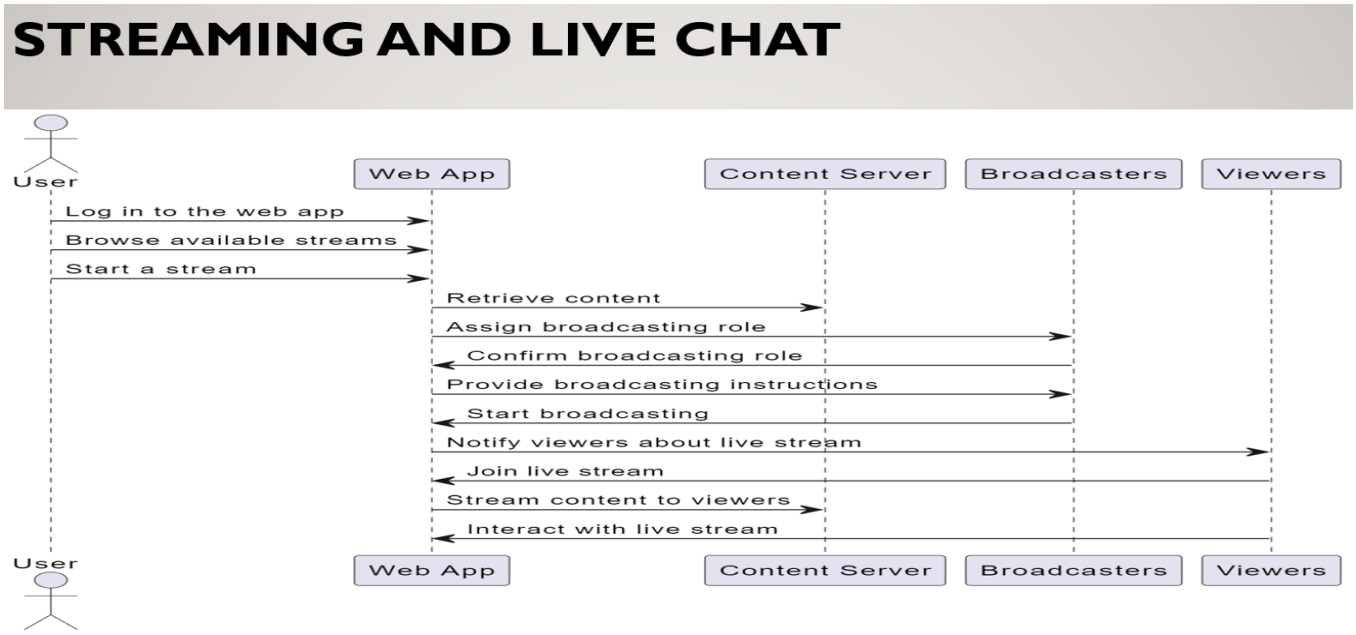
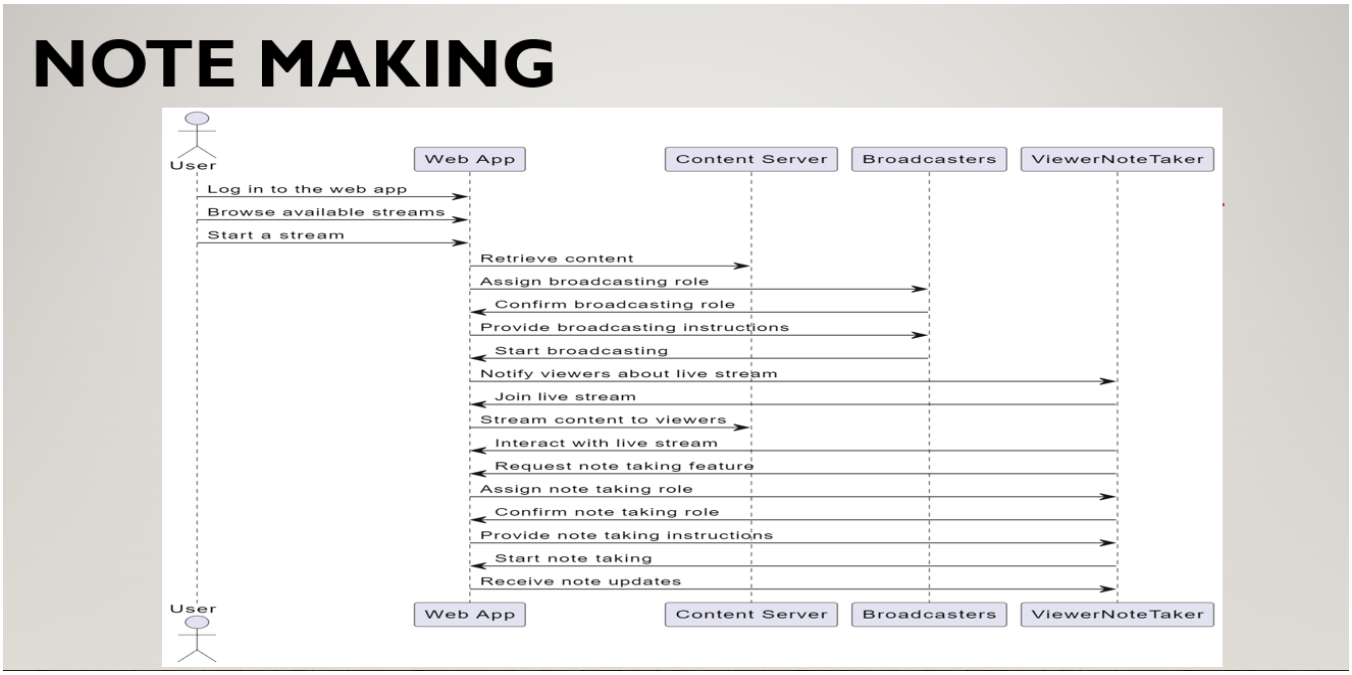


Fig 4.5 Activity diagram

4.3.3 Sequence Diagram

A sequence diagram or system sequence diagram (SSD) shows object interactions arranged in time sequence in the field of software engineering. It depicts the objects involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of scenario.





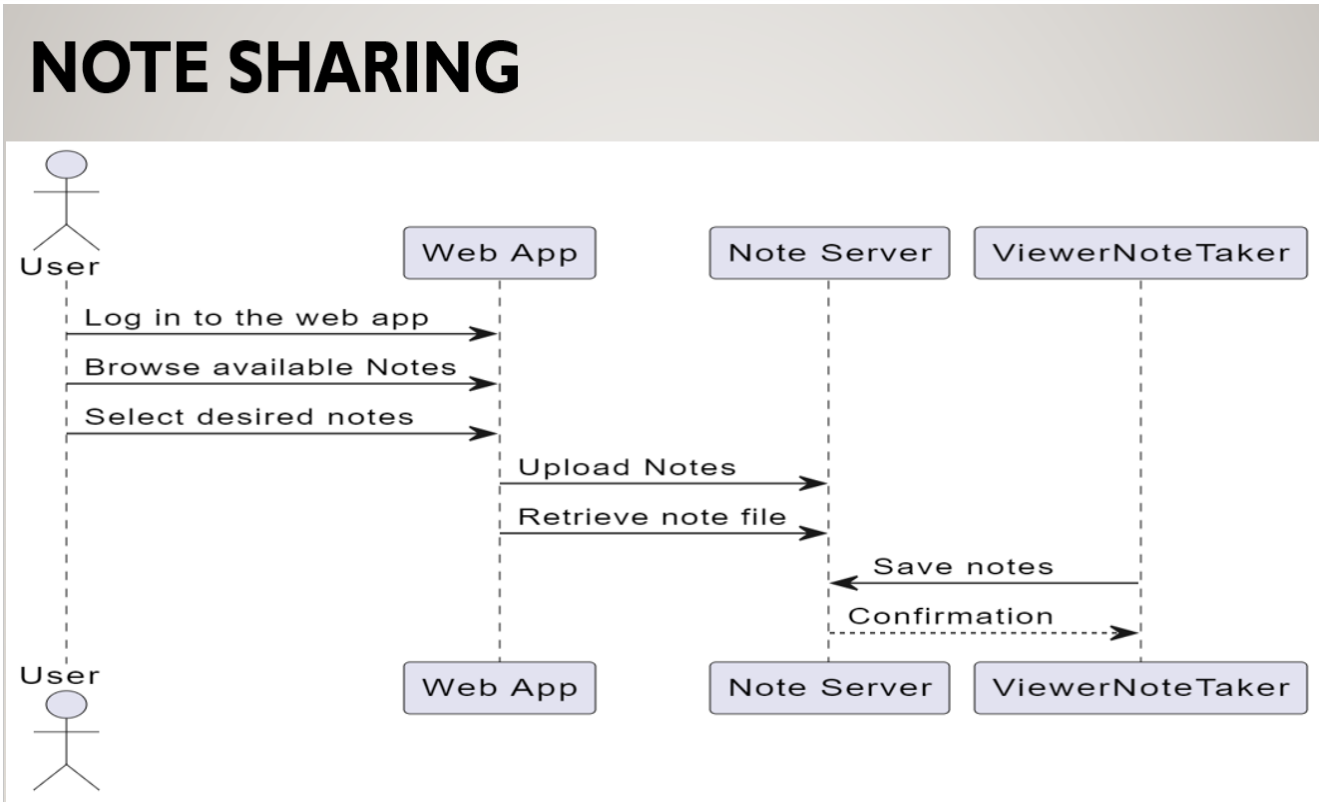


Fig 4.6 Sequence diagram for the system

4.3.4 Data Flow Diagram

Used to depict the overall flow of the project.

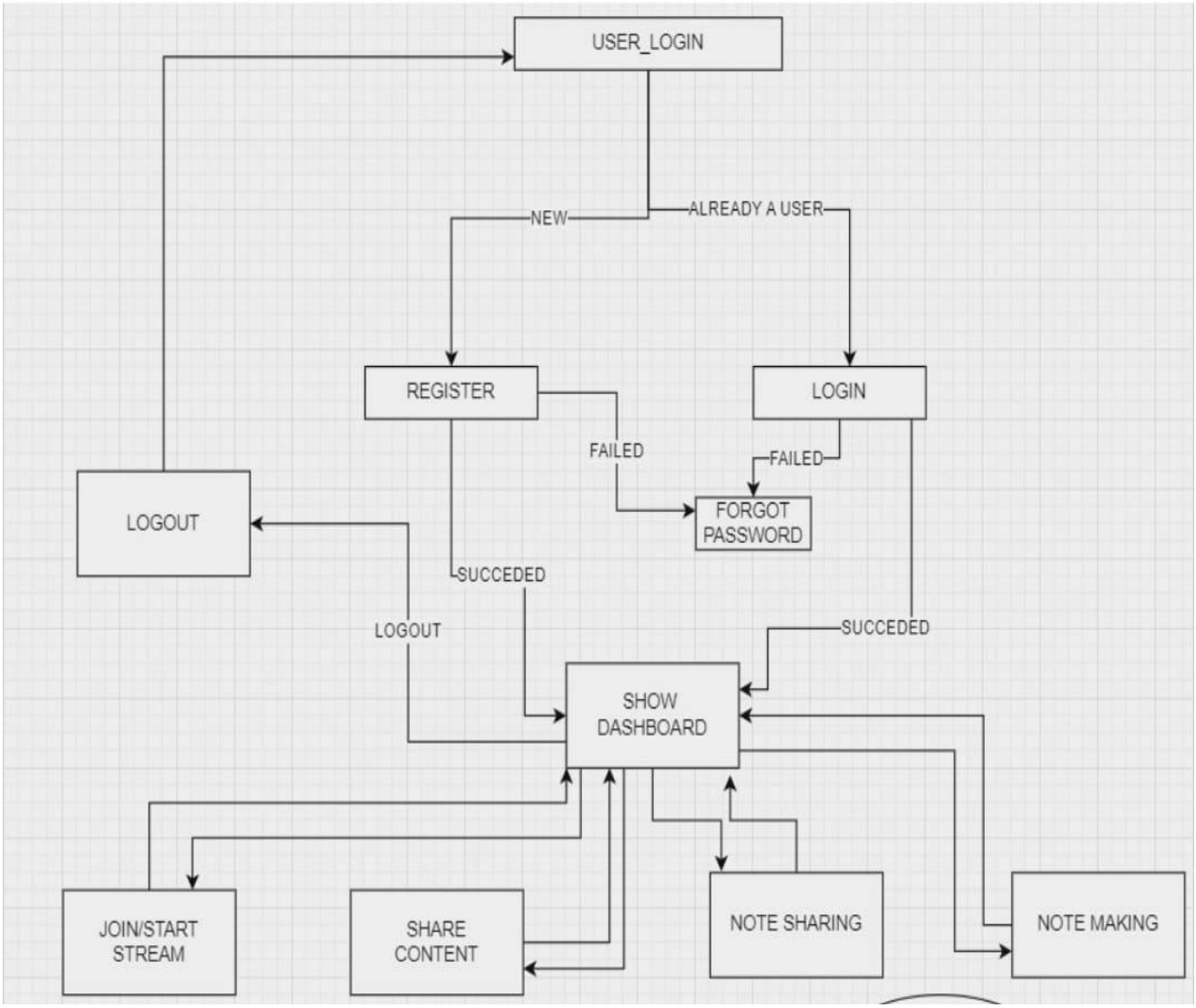


Fig 4.7 Dataflow diagram

Chapter 5:

Implementation

5.1 OVERVIEW OF TECHNOLOGIES USED

5.1.1 PROGRAMMING LANGUAGES USED

HTML

Markup language. Languages like Cascading Style Sheets (CSS) and JavaScript can assist. The most widely used markup language for documents to be viewed in a browser is HTML, or HyperText

HTML documents are loaded from a web server or local storage by browsers, who turn them into multimedia web pages.

CSS (Cascading Style Sheets)

CSS, short for Cascading Style Sheets, is a technology that dictates how HTML elements appear on a webpage, encompassing layout and design aspects. This separation of content from presentation simplifies the management of multiple pages' appearances simultaneously. CSS resides in external files and is instrumental in tailoring websites for diverse devices and screen sizes. Its inception was driven by the need to overcome HTML's limitations in formatting, which had led to convoluted and inefficient coding practices. CSS streamlines website design and maintenance by extricating style formatting from HTML.

JavaScript

JavaScript is a dynamic computer programming language. Its implementations enable client-side script to interact with users to create dynamic pages, and it is most frequently used as a component of web pages. It is an object-oriented programming language that may be interpreted.

MySQL

MySQL is an open-source relational database management system (RDBMS) that is widely used for storing and managing data in various applications. It was first released in 1995 by a Swedish company called MySQL AB, which was later acquired by Sun Microsystems and then by Oracle Corporation.

One of the key features of MySQL is its ability to handle large volumes of data efficiently and reliably. It uses a client-server architecture, where the database is stored on a server and accessed by clients using a query language called SQL (Structured Query Language).

MySQL supports various storage engines, which are responsible for handling the storage and retrieval of data. The most commonly used storage engine is InnoDB, which provides support for transactions and foreign keys, making it suitable for applications that require ACID (Atomicity, Consistency, Isolation, Durability) compliance.

PHP

PHP, which stands for Hypertext Preprocessor, is a widely-used open-source scripting language that is especially suited for web development and can be embedded into HTML.. One of the key features of PHP is its ability to interact with databases, making it an essential tool for building dynamic websites that rely on data storage and retrieval. It supports a wide range of database systems, including MySQL, PostgreSQL, and SQLite, among others.

PHP is known for its simplicity and ease of use, making it a popular choice for beginners and experienced developers alike. It offers a wide range of built-in functions and libraries that simplify common tasks, such as handling form data, manipulating strings, and interacting with files.

5.1.2 FRAMEWORK USED

WebRTC

Web Real-Time Communication, or also known as WebRTC, is an open-sourced application-programming interface supported by Apple, Google, Microsoft and Mozilla that enables real-time peer-to-peer communication directly in web browsers. It enables various functionalities like audio, video, and data sharing without requiring plugins or external applications. With its secure and efficient protocols, WebRTC has become a cornerstone for building seamless video conferencing, voice calling, and file sharing applications over the internet. Its versatility and compatibility across various platforms make it a preferred choice for developers seeking to integrate interactive communication features into their web applications.

5.1.3 LIBRARIES

CKEditor

CKEditor, previously known as FCKeditor, is a popular WYSIWYG rich text editor designed for direct content creation within web pages and online applications. Developed by CKSource, this editor is primarily coded in JavaScript and is distributed under both open source and commercial licenses.

CKEditor 4 boasts features reminiscent of traditional desktop word processors, offering styling options such as bold, italic, and underline, as well as support for bulleted and numbered lists, tables, block quoting, and hyperlinking. It also includes a reliable undo function, image insertion capabilities, and the ability to paste content from Microsoft Word. Additionally, CKEditor 4 comes with a built-in spell-checking feature provided by WebSpellChecker LLC, which, by default, is offered for free but includes a banner ad. This spell checker identifies and marks spelling errors with red wavy lines, offering users a selection of correct alternatives.

5.2 WORKING

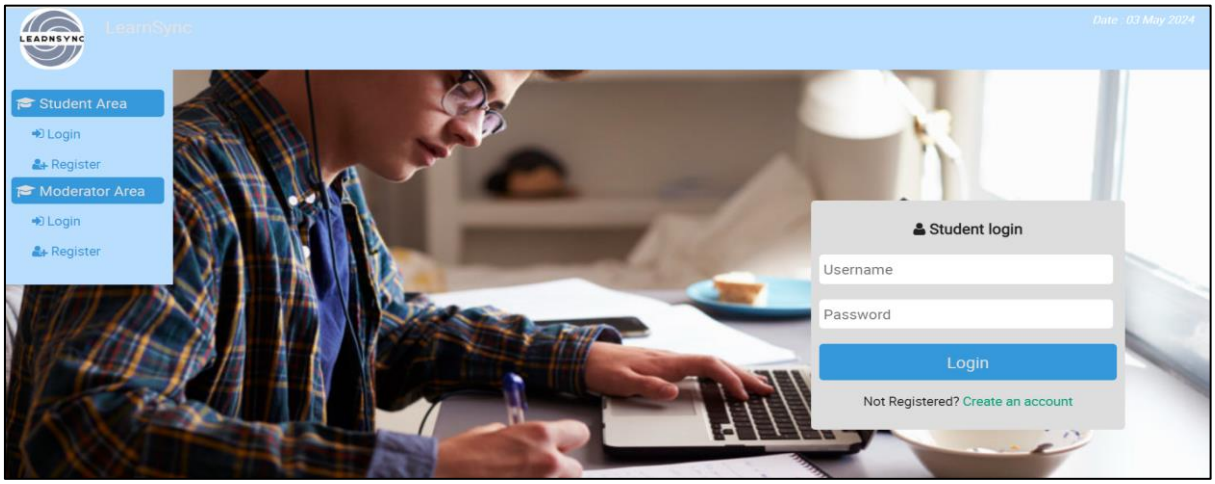


Fig 5.1 The Login Screen

This is the login page of the site. One can either log in as a student or a moderator.
After you successfully login, the home page and the entire platform can be accessed.
The login is protected by password and user can create passwords for their user accounts.

Login as Student: Students can access their accounts by entering their username and password. Upon successful authentication, they will be directed to the home page where they can explore various features and functionalities tailored for students.

Login as Moderator: Moderators, such as teachers or administrators, can log in using their designated credentials. Similar to students, they need to enter their username and password to gain access. Once authenticated, moderators will be directed to a specialized dashboard equipped with tools and permissions to manage and oversee the platform.

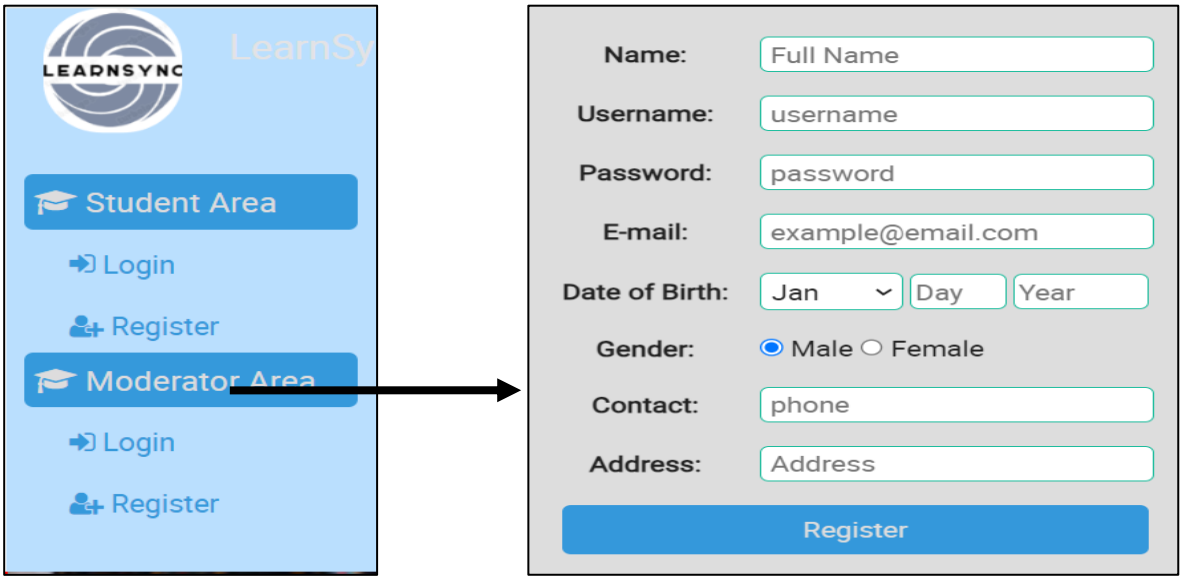


Fig 5.2 The Registration Form

New users can register using the registration form

Login Process:
Selection: Upon arriving at the login page, users choose whether they want to log in as a student or a moderator by clicking on the respective option.

Credentials Entry: After selecting their role, users are presented with a login form where they input their username and password.

Authentication: Upon submitting their credentials, the system verifies the provided information. If the username and password combination is correct and matches an existing account, the user is granted access to the platform.

Error Handling: In case of incorrect credentials or other authentication issues (e.g., inactive account), appropriate error messages are displayed to guide users in rectifying the issue.

Session Establishment: Upon successful authentication, the system establishes a secure session for the user, allowing them to navigate through the platform without repeatedly logging in.

Redirection: After logging in, users are automatically redirected to the home page or the designated dashboard based on their role (student or moderator).

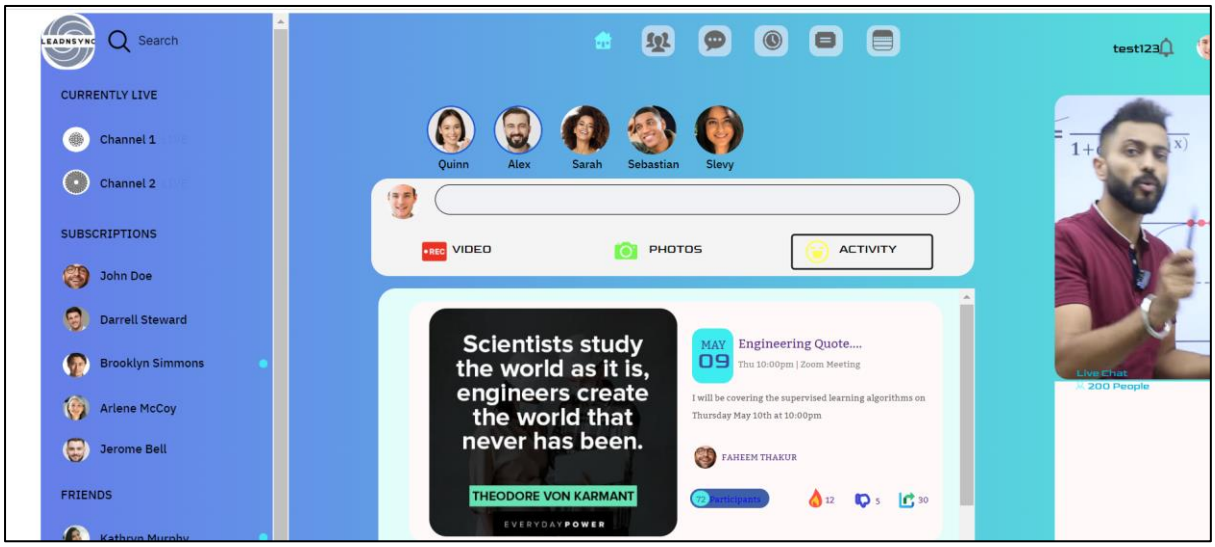


Fig 5.3 The Content Sharing page

The home page/content sharing page is where content like photos, videos uploaded by users can be viewed.

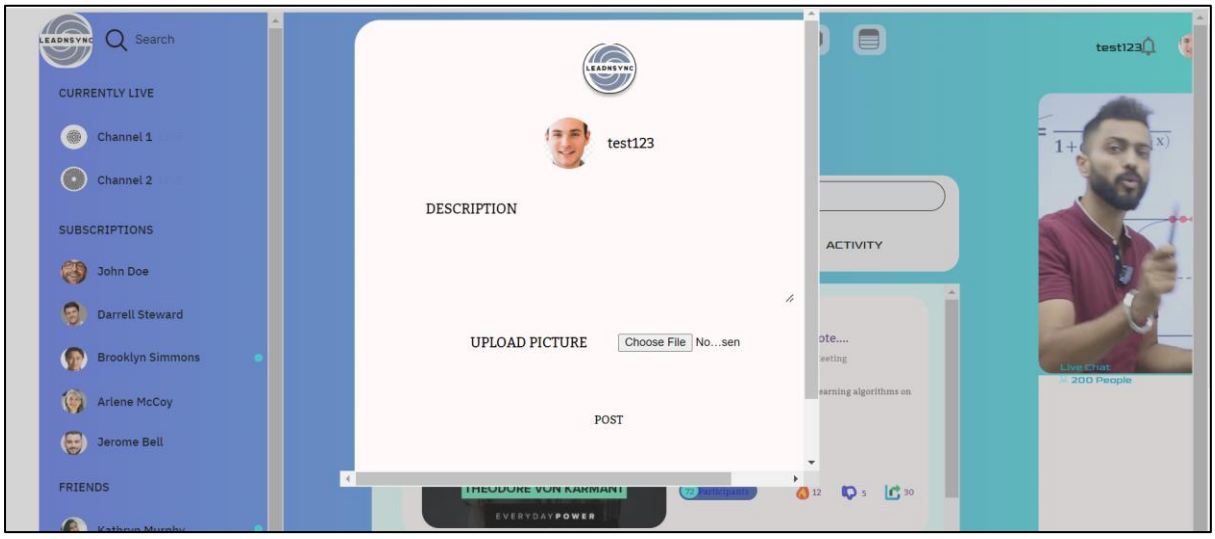


Fig 5.4 Form to upload content

Using this form, content like photos, videos can be posted to the site.
Users can describe their post in the space provided.

Fig 5.5 Notes sharing page

Using the notes sharing feature, participants can share with each other, notes in pdf format.

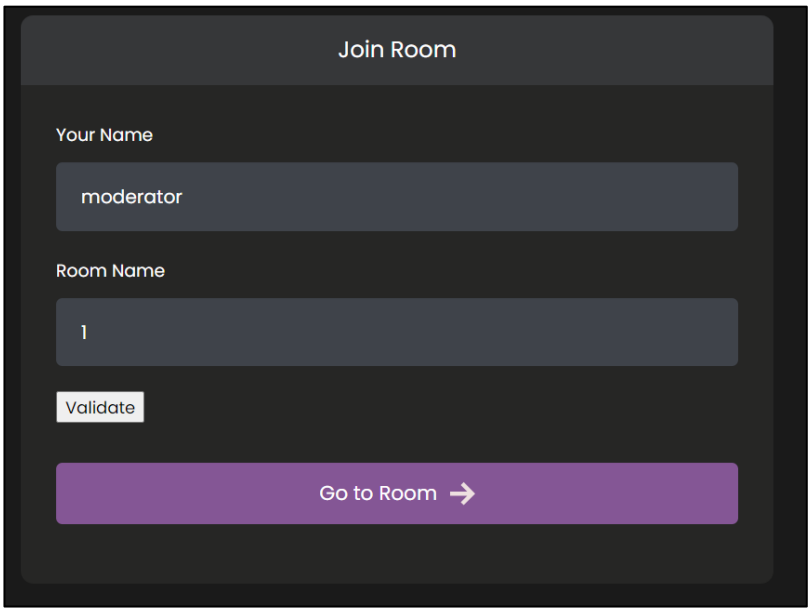


Fig 5.6 The Stream Lobby Page

This is the lobby page where the user can enter the stream on the basis of the room name.

The room name is shared to the participants by the moderator who creates the room.

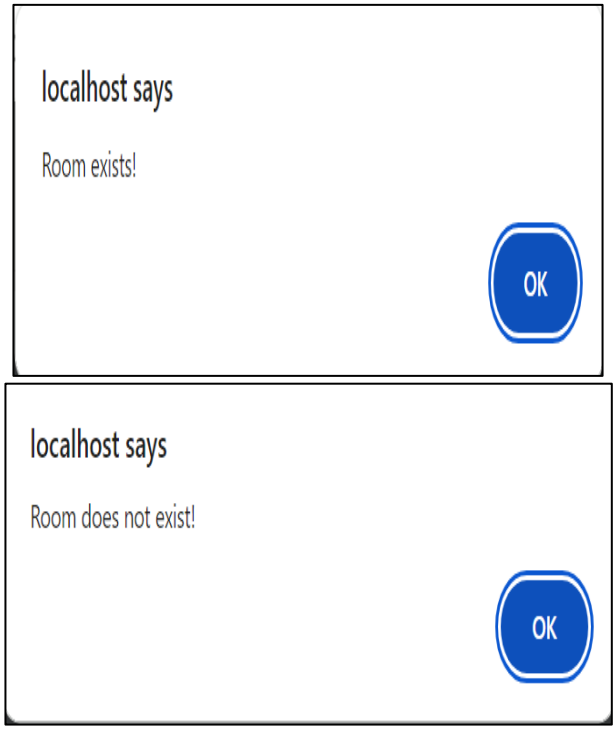
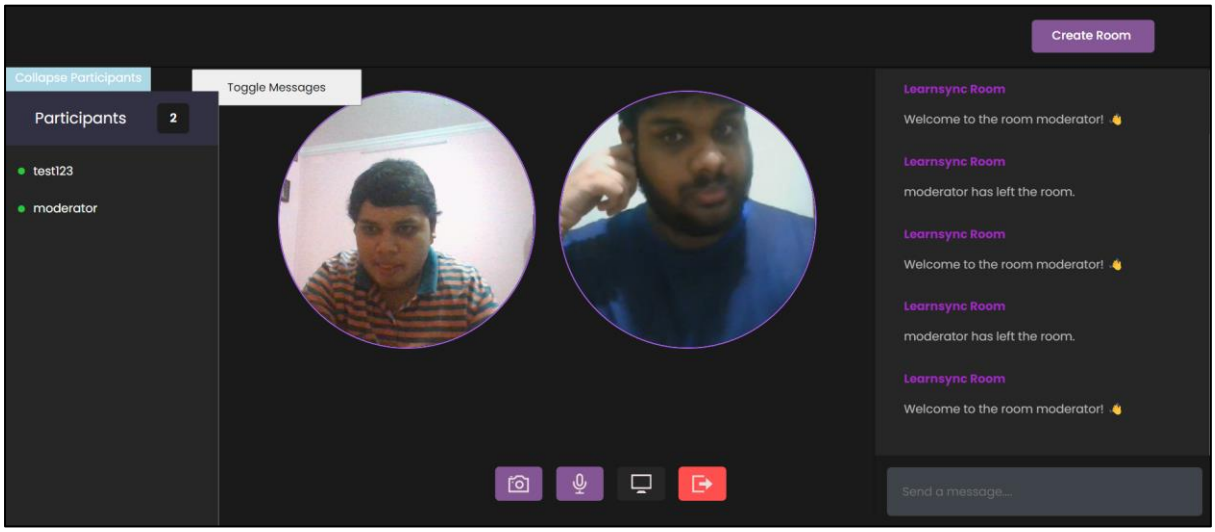


Fig 5.7 Stream Validation Check

Once the participant enters the room name, using the validate button, it can be checked if the room exists or not.



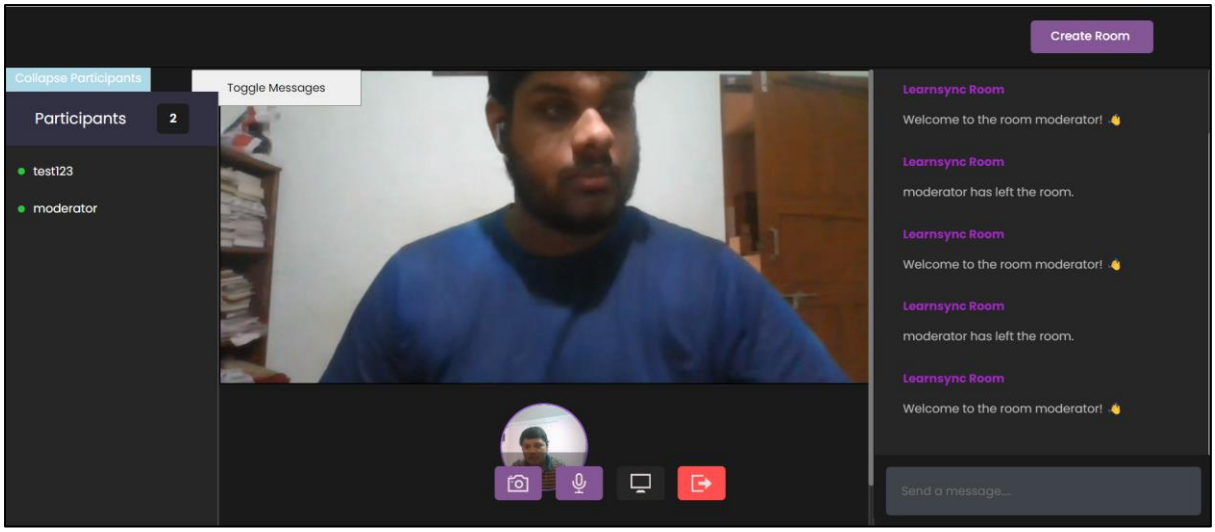


Fig 5.8 The Stream UI

This is the main stream UI page, where the participants can interact with the stream.

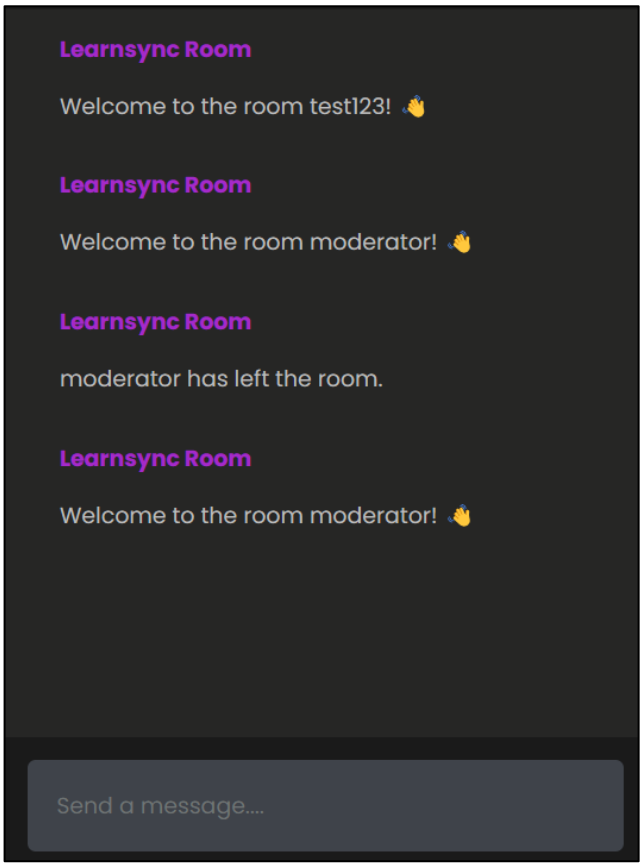


Fig 5.9 The Chat Box

Using the chat box provided, participants of stream can communicate with each other.

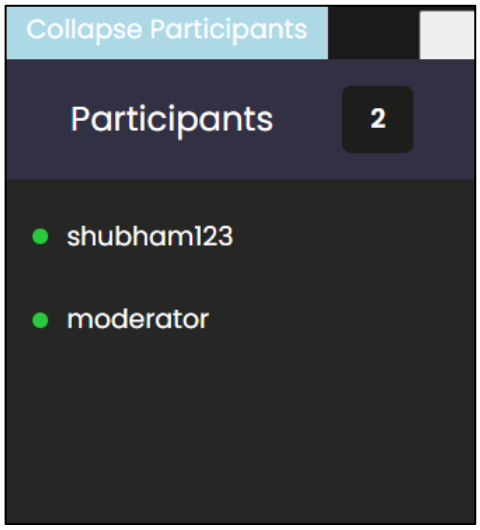


Fig 5.10 Participants List

This is the list of all the participants present in the stream room.

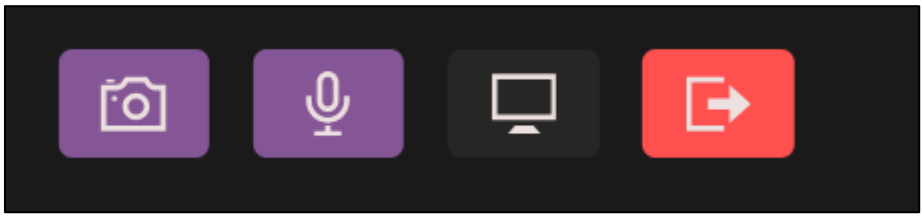


Fig 5.11 Stream Audio Video Controls

Using these buttons, camera and microphone can be turned ON or OFF, the screen can be shared, stream can be left.

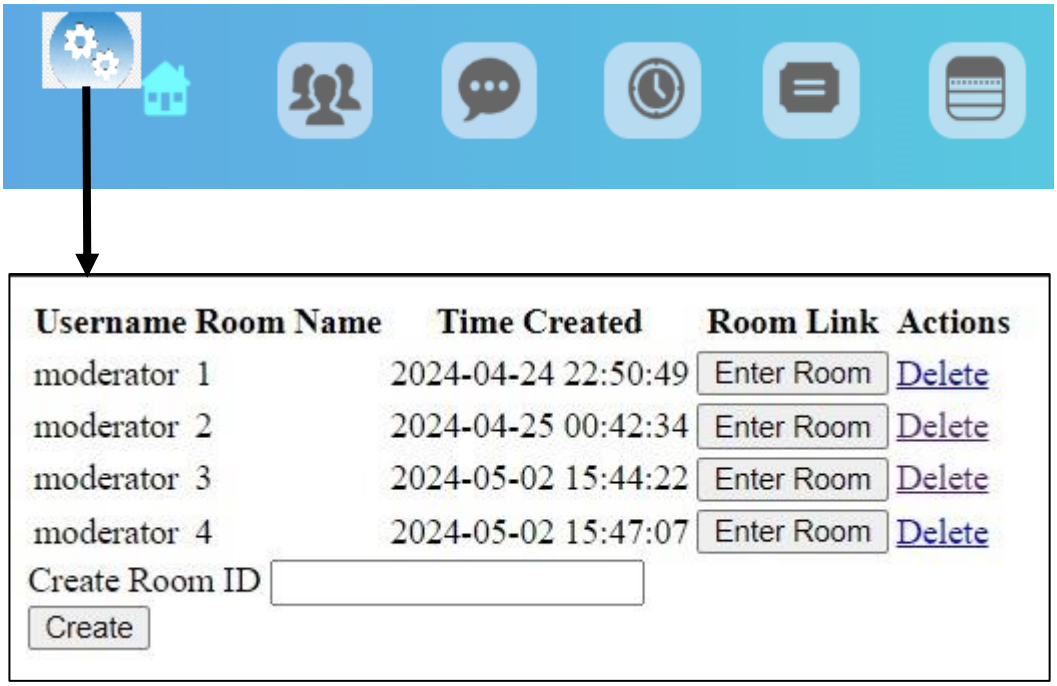


Fig 5.12 Admin Dashboard

When logged in as a moderator, the option to enter admin dashboard comes. Using the admin dashboard, the room can be created, entered as well as deleted by the moderator.

CHAPTER 6:
TESTING

6.1 TEST CASES

Test Case	**Testing**
Test ID	001
Test Name	Login
Item being tested	Login Form
Sample Input	Correct email and password entered
Expected Output	User should be logged in (User should reach the home page)
Actual Output	User is logged in and can view the home page
Remarks	Pass

Table 6.1.1 Test- Login (1)

Test Case	**Testing**
Test ID	002
Test Name	Login
Item being tested	Login Form
Sample Input	Incorrect username and/or password entered
Expected Output	User should not be logged in
Actual Output	User is not logged in
Remarks	Pass

Table 6.1.2 Test- Login (2)

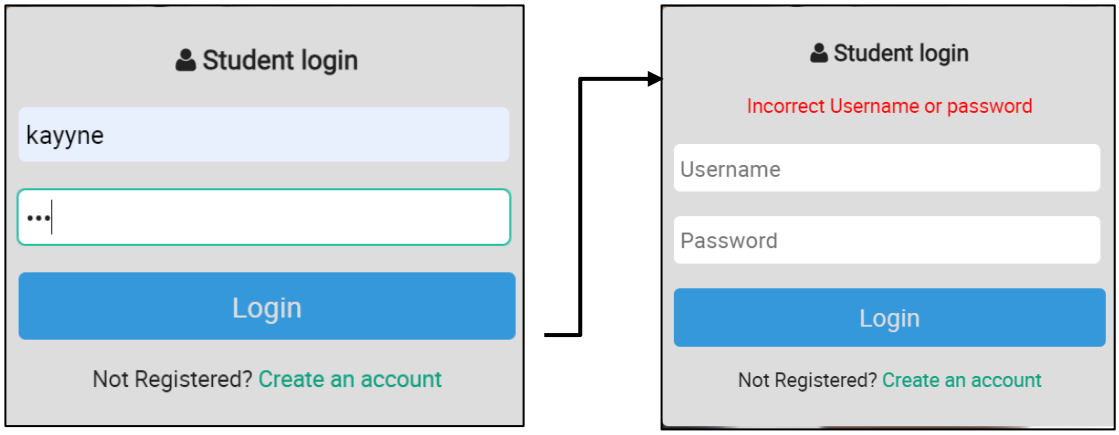


Fig 6.1 Incorrect Login Credentials Testing

Test Case	Testing
Test ID	003
Test Name	Sign Up
Item being tested	Registration Form
Sample Input	Valid user details entered
Expected Output	User should be created successfully
Actual Output	User is created successfully
Remarks	Pass

Table 6.1.3 Test- Sign Up (1)

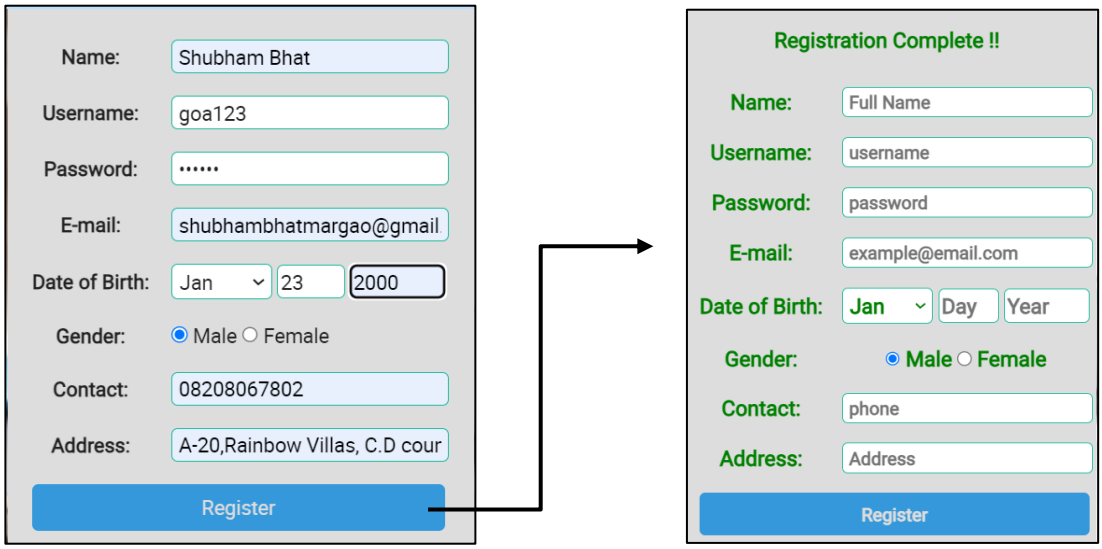


Fig 6.2 Successful Registration Testing

Test Case	Testing
Test ID	004
Test Name	Sign Up
Item being tested	Registration Form
Sample Input	Invalid user details entered (email id)
Expected Output	User should not be created
Actual Output	User is not created (until valid details are entered)
Remarks	Pass

Table 6.1.4 Test- Sign Up (2)

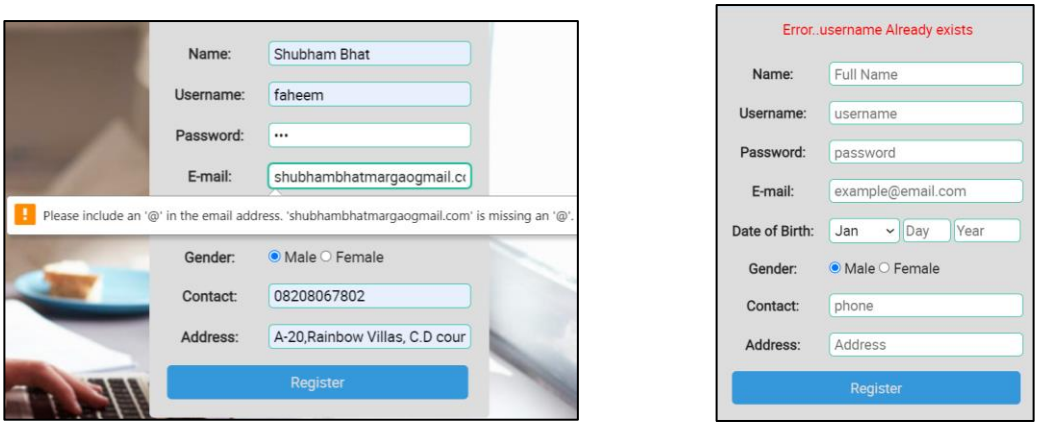


Fig 6.3 Unsuccessful Registration Testing - 1

Test Case	**Testing**
Test ID	005
Test Name	Sign Up
Item being tested	Registration Form
Sample Input	Details in one or more fields not entered
Expected Output	User should not be created
Actual Output	User is not created (until valid details are filled in all fields)
Remarks	Pass

Table 6.1.5 Test- Sign Up (3)

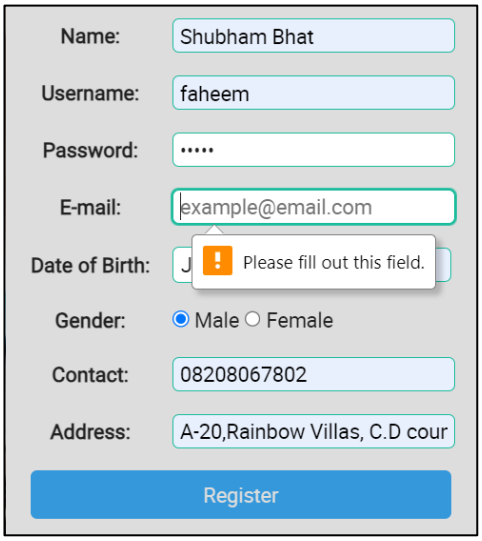


Fig 6.4 Unsuccessful Registration Testing - 2

Test Case	Testing
Test ID	006
Test Name	Content Sharing
Item being tested	Content Sharing Form
Sample Input	File to be uploaded is selected
Expected Output	Content post should be created
Actual Output	Content post is created
Remarks	Pass

Table 6.1.6 Test- Content Sharing (1)

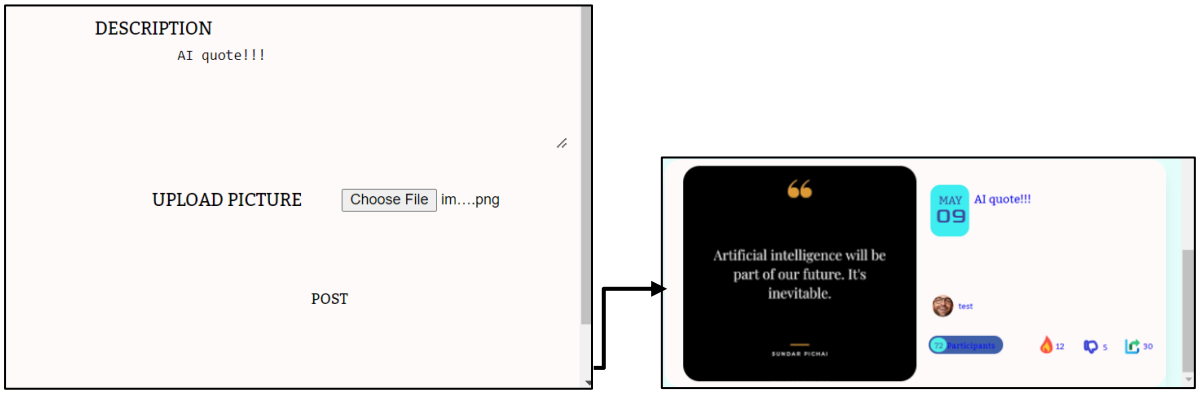


Fig 6.5 Successful Content Upload

Test Case	Testing
Test ID	007
Test Name	Content Sharing
Item being tested	Content Sharing Form
Sample Input	File to be uploaded is not selected
Expected Output	Content post should not be created
Actual Output	Content post is not created (until file is selected)
Remarks	Pass

Table 6.1.7 Test- Content Sharing (2)

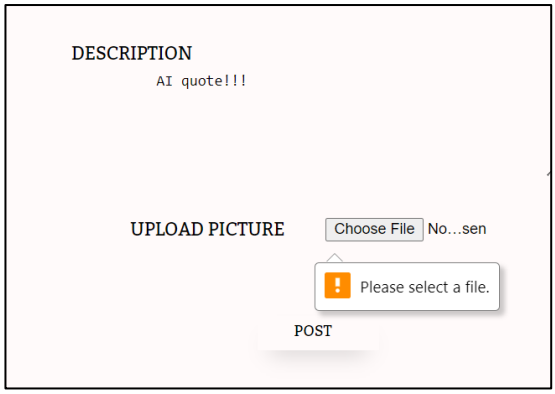


Fig 6.6 Unsuccessful Content Upload

Test Case	**Testing**
Test ID	008
Test Name	Content Sharing
Item being tested	Content Sharing form
Sample Input	Content file size greater than 10MB
Expected Output	Content post should not be created
Actual Output	Content post is not created
Remarks	Pass

Table 6.1.8 Test- Content Sharing (2)

Test Case	**Testing**
Test ID	009
Test Name	Notes Sharing
Item being tested	Notes Sharing form
Sample Input	Notes file to be uploaded is selected
Expected Output	Notes post should be created
Actual Output	Notes post is created
Remarks	Pass

Table 6.1.9 Test- Notes Sharing (1)

Fig 6.7 Successful Notes Upload

Test Case	**Testing**
Test ID	010
Test Name	Notes Sharing
Item being tested	Notes Sharing form
Sample Input	Notes file size greater than 1MB
Expected Output	Notes post should not be created
Actual Output	Notes post is not created
Remarks	Pass

Table 6.1.10 Test- Notes Sharing (2)

Test Case	**Testing**
Test ID	011
Test Name	Notes Sharing
Item being tested	Notes Sharing Form
Sample Input	File to be uploaded is not selected
Expected Output	Notes post should not be created
Actual Output	Notes post is not created (until file is selected)
Remarks	Pass

Table 6.1.11 Test- Notes Sharing (3)

Test Case	**Unit Testing**
Test ID	012
Test Name	Stream Validation
Item being tested	Validation Button
Sample Input	Correct Stream ID
Expected Output	Successful validation and user should be allowed to enter the room
Actual Output	Successful validation and the user is allowed to enter the room
Remarks	Pass

Table 6.1.12 Test- Stream Validation (1)

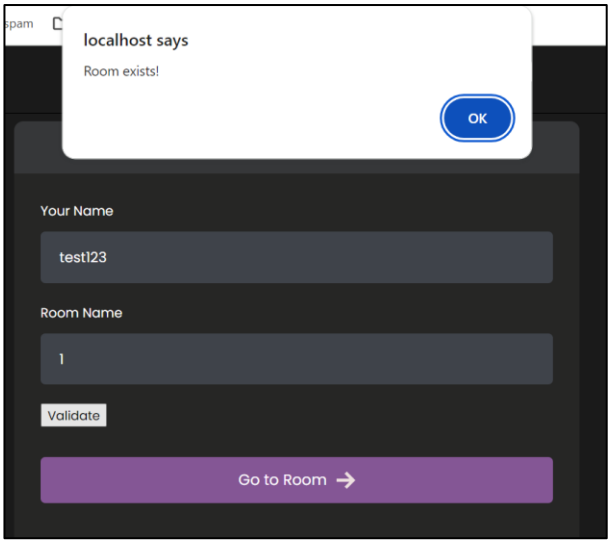


Fig 6.8 Successful Room Validation

Test Case	**Unit Testing**
Test ID	013
Test Name	Stream Validation
Item being tested	Validation Button
Sample Input	Incorrect Stream ID
Expected Output	Unsuccessful validation and user should not be allowed to enter the room
Actual Output	Unsuccessful validation and user is not allowed to enter the room
Remarks	Pass

Table 6.1.13 Test- Stream Validation (2)

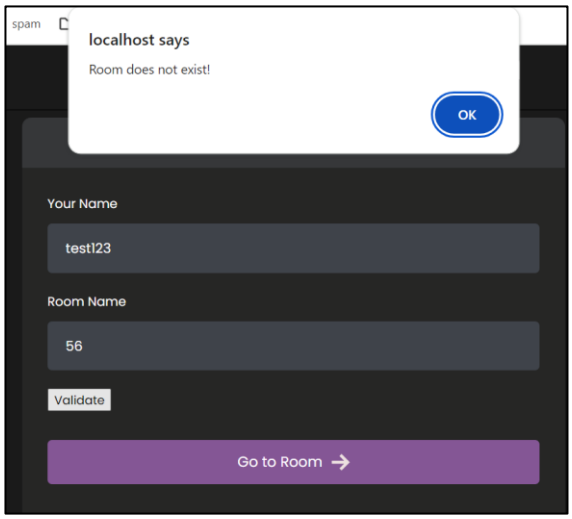


Fig 6.9 Unsuccessful Room Validation

Test Case	Unit Testing
Test ID	014
Test Name	Room Creation
Item being tested	Create room id button
Sample Input	Unique room id
Expected Output	Room should be successfully created
Actual Output	Room is successfully created
Remarks	Pass

Table 6.1.14 Test- Room Creation (1)

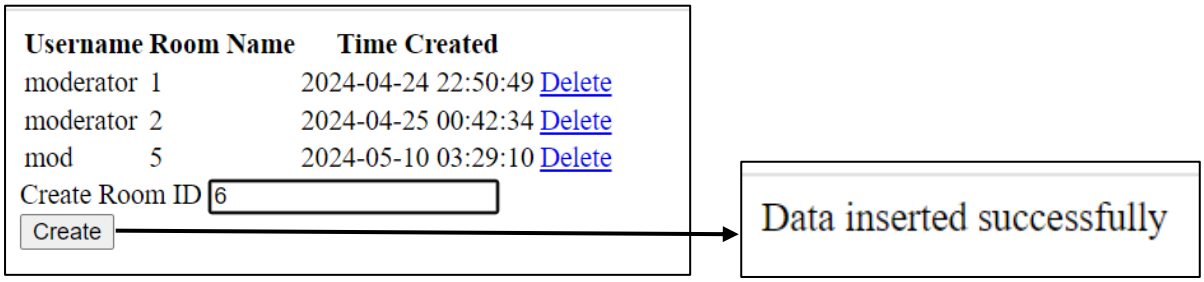


Fig 6.10 Successful Room Creation

Test Case	Unit Testing
Test ID	015
Test Name	Room Creation
Item being tested	Create room id button
Sample Input	Pre-existing room id
Expected Output	Room should not be created
Actual Output	Room is not created
Remarks	Pass

Table 6.1.15 Test- Room Creation (2)

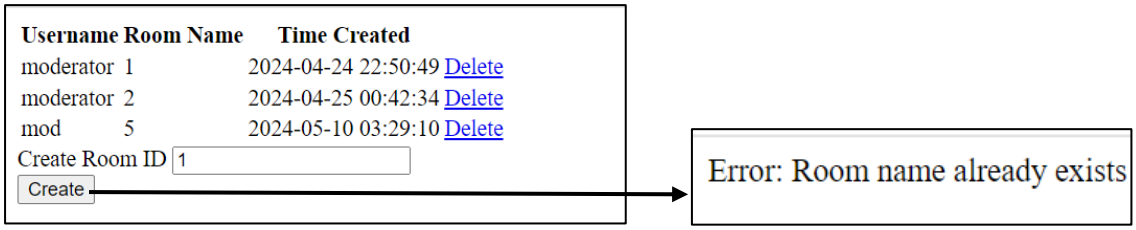


Fig 6.11 Unsuccessful Room Creation

Test Case	**Unit Testing**
Test ID	016
Test Name	Sending a message
Item being tested	Live chat box
Sample Input	Any particular string of characters
Expected Output	Message should be sent Successfully
Actual Output	Message is sent Successfully
Remarks	Pass

Table 6.1.16 Test- Sending a message

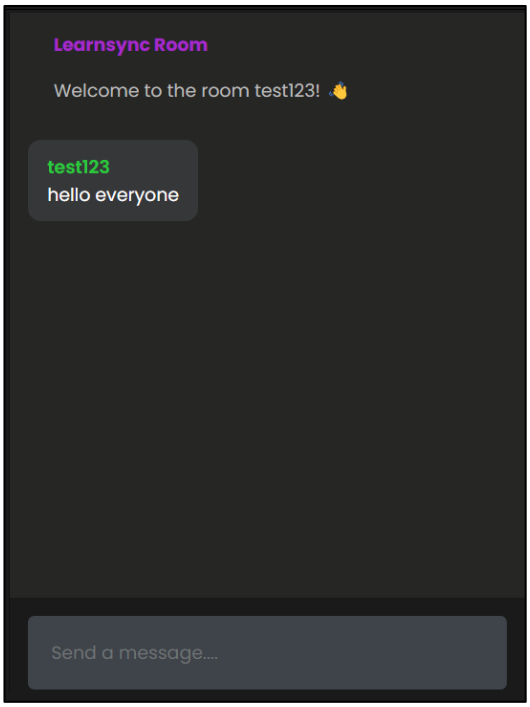


Fig 6.12 Chat Testing

Chapter 6:

Conclusion

In conclusion, LearnSync is a platform that will help create a community for students that have a common goal in mind which is learning from fellow students. It is an app that transforms the way we learn by connecting with friends and creating a symbiotic community of students as students can help each other by exchanging information. This platform can be a place where learning becomes a collaborative adventure and everyone has the opportunity to teach, learn, and grow together.

On LearnSync, students will be able to filter in the other students having the same syllabus or same uni or even same college and learn from them and it will be better equipped in terms of functionality to suit the students needs.

Chapter 7:

References

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[2] S. I. Ahamed and M. Adithan. Streaming Educational Videos and Collaborative Learning.

[3] Élise Lavoué. Social Tagging to Enhance Collaborative Learning.

[4] Matthew Courtney ,Jamie Costley, Matthew Baldwin, Kyungmee Lee, Mik Fangu. Individual versus collaborative note-taking: Results of a quasi-experimental study on student note completeness, test performance, and academic writing

[5] R. C. Hsu and C. M. Chou. A Review of Web-Based Collaborative Learning: Factors beyond Technology